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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WEGERT, SANDRA L	

ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/024,535	MARCEL ET AL.	
	Examiner	Art Unit	
	Sandra Wegert	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) *3-14,16-19,21 and 23-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,15,20 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/11/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Status of Application, Amendments, and/or Claims

The List of Related cases, received 17 October 2003 and the Information Disclosure Statement, received 11 March 2002, have been entered into the record. Applicant's elections (23 August 2004) of Invention I (Claims 1-20 and 22), with the following secondary Inventions: SEQ ID NO: 2 and the disorder, "impaired social activity linked to sexuality," are acknowledged. Applicants traversed the Election of all Inventions; however they made no statement as to whether the secondary Inventions are patentably distinct (page 5, 23 August 2004). The traversal is on the ground(s) that the claims can be searched without undue burden. However, this has not been found persuasive because, as discussed in the previous Office Action (13 July 2004), the listed mental disorders differ in almost every respect: patient population, treating personnel, underlying receptor mechanisms, underlying physiological and pathological mechanisms, as well as whether there are animal models for each of the disorders. To search the main invention along with treatment of the listed mental disorders would constitute undue search burden, as stated in the previous Office Action (page 4, 13 July 2003). Likewise, the peptides listed are patenably distinct based on receptor interactions, tissue localization, and the databases that need be searched for each peptide. The peptides listed differ in their cellular effects, tissue interactions, as well as methods of administration and measurement. For these reasons, search of all claimed Inventions would constitute an undue search burden.

The requirement is still deemed proper and is therefore made FINAL.

Claims 3-14, 16-19, 21 and 23-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected Inventions, there being no allowable generic or linking claim.

Claims 1, 2, 15, 20 and 22 are under examination in the Instant Application.

Informalities

Oath/ Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

A new oath or declaration is required because the correct oath or declaration has not been submitted with this application.

Appropriate correction is required.

Specification

The disclosure is objected to because of the following informalities:

Continuity

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows: A reference to the prior application must be inserted as the first sentence of the specification of this application or in an application data sheet (37 CFR 1.76).

Appropriate correction is required.

Sequence Rules

The instant application is not fully in compliance with the sequence rules, 37 CFR 1.821-1.825, because the sequence listing contains wildcard symbols ("n" or "Xaa") without proper annotation at field 220 of the sequence listing heading. This occurs in SEQ ID NO: 1 and 3.

Appropriate correction is requested.

Claim Rejections/Objections

Claim Objections

Claim 2 is objected to for reciting non-elected inventions (SEQ ID NO: 1 and 3-10).

Claim Rejections - 35 USC § 112, first paragraph - enablement.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process

of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 15, 20 and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification is not enabling for the limitations of the claims wherein administering the SMR1 peptide of SEQ ID NO: 2 treats a mental disorder such as *impaired social activity linked to sexuality.*

Claims 1, 2, 15, 20 and 22 are drawn to a method of treating a mental disorder, namely *impaired social activity linked to sexuality,* by administering the short peptide of SEQ ID NO: 2 to mammals. Dependent claims recite a mental disorder which *comprises symptoms of more that one mental disorder* and routes of administration of the peptide.

Experiments were described in the specification in which FG-005 peptide (SMR1-QHNPR, SEQ ID NO: 2) was administered intravenously, at doses of 3-30ug/kg, to normal rats. Observational data were collected on the general alertness and insensitivity to pain of the treated animals as well as on the frequency and duration of several sexual behaviors, when peptide-treated male rats were presented with female rats. Treated rats slept less, were less-sensitive to pain, were reluctant to mount a female rat initially- but had more episodes of sex subsequently- and spent more time grooming both himself and his cage-mate (see Tables I-III, instant Disclosure). The Disclosure also described experiments in which the peptide appeared to have an anxiolytic effect, at least at low doses, as measured by the forced swim test (page 26, instant Specification).

In In re Wands, 8USPQ2d, 1400 (CAFC 1988) page 1404, the factors to be considered in

determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

A sufficient amount of direction or guidance is lacking in claims 1, 2, 15, 20 and 22. The specification describes the intravenous administration of SEQ ID NO: 2 and the measurement of the duration and frequency of several rat sexual behaviors. However, nowhere in the specification is a method described that is a treatment of *impaired social activity linked to sexuality,* as applied to humans or other mammals, including rats. Nowhere in the instant Disclosure is a nexus described between the behaviors caused by SEQ ID NO: 2, and a well-defined disorder in human beings. Nor does current or prior literature suggest actual disorders that might be treated with the peptide of SEQ ID NO: 2 (Rougeot, et al, 1998, Biomed. Rev., 9: 17-32) and there were no animal models presented in the instant Specification that suggest such disorders. Furthermore, there was no discussion, or definition given, concerning the relationship between impaired social activity and sexuality in such disorders. While it was shown that injected male rats groomed more and had more sex when presented with a female rat, it is not clear which human condition the control group was meant to model. Nor is it known which disorder the treatment is meant to ameliorate.

For these reasons, treatment of a mental disorder by administration of SEQ ID NO: 2 is not enabled by the instant Disclosure.

Furthermore, Applicants are not enabled for administration of an SMR1 *peptidomimetic* to reduce or eliminate symptoms of a mental disorder, as specified in Claim 1. It is not known what is meant by this term (see below), but only the SMR1 peptides were injected into animals in the instant Disclosure. Applicants have not disclosed a small molecule or drug that acts in the same way as SEQ ID NO: 2.

Furthermore, Applicants are not enabled for the routes of administration specified in Claim 22. The Specification is enabling only for acute venous peripheral administration of the peptide. Routes of administration can have a dramatic effect on drug disposition, and on peptides in particular (Pettit and Gombotz, 1998, TIBTECH, 16: 343-349, Table 1, for example). Furthermore, peptides are almost certainly *digested* when administered orally. Likewise, endonucleases abound in many tissues. These examples and others illustrate that the routes of administration disclosed in the instant Specification do not reasonably predict untested routes of administration.

In summary, the specification does not provide a description of a repeatable process treating a mental disorder using the method of administering an SMR1 peptide. Considerable experimentation would be necessary to identify a mental disorder that can be treated with the disclosed peptides and to identify patients, such that the peptide can be tested. In addition, the predictability of the art is very low with regard to treatment of mental disorders. For these reasons, undue experimentation would be required to identify and treat a mental disorder by administration of SEQ ID NO: 2 using the methods claimed.

Due to the large quantity of experimentation required to --determine how to identify a mental disorder in which SEQ ID NO: 2 would be a useful treatment, the lack of direction or

guidance in the specification regarding same (e.g., the lack of guidance regarding specific mental disorders modeled in the rat), the lack of working examples in which a disorder was treated, and the state of the art showing the unpredictability of treatment of mental disorders-- undue experimentation would be required of the skilled artisan to make and use the claimed invention in its full scope.

35 USC § 112, first paragraph – Written Description.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> **The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.**

Claims 1, 2, 15, 20 and 22 are also rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 2, 15, 20 and 22 are directed to methods of treating a mental disorder by administering an SMR1 peptide. Further, the claims recite use of a peptidomimetic, impaired social activity linked to sexuality, disorders that comprise symptoms of more than one disorder, and alternative routes of administration of the polypeptide.

The specification teaches administration of a polypeptide (SEQ ID NO: 2) to normal male rats. However, the specification does not teach treatment of a mental disorder in humans, and does not disclose an animal model of a mental disorder in the current Specification. The

description of experiments in which SEQ ID NO: 2 is injected into normal rats is not adequate written description of a genus of treatment methods that can be applied to humans.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed"* (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed" (See *Vas-Cath* at page 1116).

With the exception of the methods referred to above, the skilled artisan cannot envision the detailed methods of treatment that would result in reducing the symptoms or eliminating the symptoms of a mental disorder in humans or other mammals. Conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of treatment. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of use. The actual treatment itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

Furthermore, Applicants are not in possession of a *peptidomimetic*, as referred to in Claim 1. One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

To provide evidence of enablement of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is the term "peptidomimetic." There is not even any identification of a chemical class that might act in the same way as an SMR1 peptide. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Therefore, only administration to rats of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 112, second paragraph, indefiniteness.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

Claim1, 2, 15, 20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 15, 20 and 22 are indefinite for reciting or encompassing a "peptidomimetic" for use in the claimed methods of treatment. However, one skilled in the art cannot determine the metes and bounds of the claimed invention because the peptidomimetic cited in the claims is not defined in the specification. Furthermore, since the claimed methods and encompassed compounds are complicated and are not well-documented in the literature, the peptidomimetic referred to is not obvious.

Furthermore, Claims 1 and 15 are indefinite for reciting or encompassing a disorder that can be described as "impaired social activity linked to sexuality." One skilled in the art cannot determine the metes and bounds of the claimed invention because it is not clear what the phrase means; both "impaired social activity" and activity "linked to sexuality." Furthermore, "impaired social activity linked to sexuality" disorders are poorly defined in the Specification or encompass many genera of diseases and disorders, including physiological (pages 14-17).

Conclusion: Claims 1, 2, 15, 20 and 22 are rejected for the reasons recited above.

Advisory information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sandra Wegert whose telephone number is (571) 272-0895. The examiner can normally be reached Monday - Friday from 9:00 AM to 5:00 PM (Eastern Time). If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Brenda Brumback, can be reached at (571) 272-0961.

The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SLW

24 November 2004

Elizabeth C. Kemmerer

ELIZABETH KEMMERER
PRIMARY EXAMINER